

WHAT IS CLAIMED IS:

1. A method, comprising:

5 acquiring aerial images of a reticle containing a design pattern, wherein the aerial images
are acquired for different values of a member of a set of lithographic variables;
and

determining a presence of an anomaly in the design pattern by comparing at least one pair
10 of the aerial images corresponding to at least two of the different values.

2. The method of claim 1, wherein one of the different values represents a reference member
value.

- 15 3. The method of claim 1, wherein the member comprises illumination focus, exposure,
degree of partial coherence, illumination mode, or numerical aperture.

4. The method of claim 1, wherein the reticle is a single die reticle or a multi-die reticle.

- 20 5. The method of claim 1, wherein the anomaly comprises a design pattern defect.

6. The method of claim 1, wherein the anomaly comprises a reticle enhancement technique
defect.

- 25 7. The method of claim 1, wherein the anomaly comprises a transient repeating defect that
will print under only a portion of the different values.

8. The method of claim 1, wherein the aerial images are acquired with different detectors
having the different values.

9. The method of claim 1, further comprising inspecting the reticle for other types of anomalies using one of the aerial images, wherein the other types of anomalies comprise reticle manufacturing errors and contaminants.

5 10. The method of claim 9, wherein said inspecting comprises a die-to-database comparison or a die-to-die comparison.

11. The method of claim 1, further comprising prior to said determining, preprocessing the at least one pair of the aerial images to remove relatively high intensity values and relatively low
10 intensity values from the at least one pair of the aerial images.

12. The method of claim 1, further comprising identifying regions of the reticle for review based on a location of the anomaly.

15 13. The method of claim 12, wherein the review comprises aerial image review at varying levels of optical conditions.

14. The method of claim 1, wherein if more than one anomaly is found in the design pattern, the method further comprises binning the more than one anomaly according to regions of the
20 reticle proximate the more than one anomaly.

15. The method of claim 1, further comprising determining a process window for a lithography process to be carried out using the reticle.

25 16. The method of claim 1, further comprising determining a critical status of the anomaly.

17. A method, comprising:

acquiring aerial images of a reticle containing a design pattern, wherein the aerial images
are acquired for different values of a member of a set of lithographic variables;

comparing at least one pair of the aerial images corresponding to at least two of the
different values; and

determining an area on the reticle where a lithography process using the reticle is most
susceptible to failure based on results of said comparing.

18. The method of claim 17, wherein one of the different values represents a reference
member value.

19. The method of claim 18, wherein the area comprises anomalies that are common to the at
least one pair of the aerial images not acquired at the reference member value and that are not
common to the aerial image acquired at the reference member value.

20. A method, comprising:

inspecting a reticle containing a design pattern for non-transient defects;

acquiring aerial images of the reticle for different values of a member of a set of
lithographic variables; and

determining a presence of transient repeating defects on the reticle by subtracting the non-
transient defects from the aerial images and comparing at least one pair of the
aerial images corresponding to at least two of the different values.

21. The method of claim 20, wherein said inspecting and said acquiring are performed substantially simultaneously.

22. The method of claim 20, wherein said inspecting comprises aerial imaging of the reticle at a reference member value of the set of the lithographic variables.

23. The method of claim 20, wherein said inspecting is performed using a non-aerial imaging reticle inspection system.

24. The method of claim 20, wherein said inspecting comprises a die-to-database comparison or a die-to-die comparison.

25. The method of claim 20, further comprising determining a process window for a lithography process to be carried out using the reticle based on the transient repeating defects.

26. The method of claim 20, wherein the non-transient defects comprise reticle manufacturing errors or contaminants on the reticle.